

EXHIBIT 4

Contact

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(LinkedIn)

Top Skills

Networking

Storage Area Networks

Fibre Channel

Languages

English (Native or Bilingual)

Portuguese (Native or Bilingual)

Spanish (Native or Bilingual)

Honors-Awards

Software Engineer

Student

Principal Software Engineer

Publications

Multiported Storage Devices

Patents

System and method for pricing agent for differentiated services computer networks

System and method for dynamic price determination in differentiated services computer networks

System and method for efficient management of fibre channel communication

System and method to determine fibre channel device locations using GPS

System and method for fiber channel remote activation and enhanced security

Marcus Grande

Sr. Software Engineer at Roku; Embedded Linux Developer;
Network, Storage, Audio Technology Professional
Austin, Texas Area

Summary

- Experience in Enterprise and Consumer Electronics space
- Expertise Software Development, Networking, Storage, and Home Audio technology
- Experience with Linux and UNIX (AIX) Device Driver and System Programming. Previous experience with Windows NT drivers
- Consumer Electronics - HDMI, Home Audio, Smart TVs
- Experience with various Storage/IO technologies: FC/FCoE SAN, SCSI, SAS, PCIe, Flash Update, Open Firmware, I/O Virtualization (NPIV, SR-IOV). Some iSCSI
- Experience with various networking technologies: Converged Network Adapters (CNA), TCP, UDP, IP, ICMP, VDSL, Ethernet, VLANs, WiFi 802.11n/ac, Multicast audio/video (IGMP), QoS (802.11D/p, DSCP, WMM/WME), RTP/RTCP, HPNA. Some VoIP
- Experience with various router technologies: NAT, Firewalls, Traffic Shaping/Policing
- Experience with Linux Network Programming: iptables/ebtables, tc, sockets, network driver/kernel concepts, bridges
- Experience with TR-069/TR-098 CPE WAN Management Protocols (CWMP) for remote management of home routers
- Experience with frame/packet analysis tools: Wireshark, tcpdump, Finisar/JDSU
- Experience with large code bases
- Ability to consider and foresee far-reaching ramifications of design decisions and potential impacts on the customer
- Frequently consulted as a technical expert by product, test and customer support teams
- Proactive in addressing deficiencies in serviceability of products and internal processes/tools
- Ability to diagnose complex issues and design comprehensive solutions across HW/SW boundaries
- Attentive to quality and ease of maintenance

- Full software development life cycle experience, including project management, technical team lead, design, code development, test and enterprise customer support
- Strong written and verbal communication skills, presentation skills, and mentoring and teaching skills
- Extensive debugging experience of complex problems encompassing adapter drivers and firmware, storage and network switches and routers, and end devices

Experience

Roku

Sr. Software Engineer

July 2015 - Present

Austin, Texas Area

Firmware, New Products (Streaming Audio/Video Products)

- Embedded Software development for Roku Smart TV product line.
- Audio subsystem, including audio path setup and reliable playback of various audio formats (PCM-Stereo, Dolby Digital Plus, Dolby Atmos, DTS, etc.).
- Implemented support for Mobile Private Listening feature for Roku TV products. Allows user to listen to TV audio through a mobile device.
- Audio/Video Receiver (AVR) and Soundbar interoperability development work using CEC, ARC, and S/PDIF audio interconnect technologies.
- HDMI communication protocol experience - CEC, ARC, EDID.
- Added support for Remote Control programming via back-end services.

Pace Americas

Principal Software Engineer

November 2013 - July 2015 (1 year 9 months)

Pace Americas (formerly 2Wire)

Development of Embedded Linux Software for Residential Gateway Devices used by ISPs and IPTV providers. Includes Gigabit Ethernet and VDSL Broadband Access, Gigabit LAN Ethernet, VDSL, WiFi 802.11n/ac, VoIP, HPNA, TR-069, and Battery technologies.

- Developed software features (user and kernel space) across various networking technologies. Based upon Broadcom Board Support Package

(BSP) and various Broadcom SoCs (system on a chip) and Forwarding Assist (Packet Accelation) Processors.

- Development of embedded software for controlling Broadcom Ethernet Roboswitch hardware, including L2/L3 QoS, Port Mirroring, Link Negotiation, and Hardware Statistics gathering.
- Designed and implemented features for LAN-to-LAN and WAN-to-LAN Quality of Service (QoS).
- Bring-up development for advanced IPTV Ad Splicing features using RTP/RTCP Multicast audio/video technology.
- On-site developer at AT&T Labs. Worked in conjunction with AT&T Test Engineers in development of Targeted Ad Insertion technology and provided on-site support to Test Engineering group.
- Participated in weekly technical calls with Broadcom Engineers and Managers to review outstanding tickets against BSP.
- Developed ad-hoc tools/scripts for use in development process.
- Developed education and training Wiki and provided consulting to colleagues to assist in development of various features.

IBM

Converged Network Adapter Technology

2009 - November 2013 (4 years 11 months)

- Design and development of device drivers for emerging converged network adapter technology for two families of CNAs.
- Familiarity with Ethernet FCoE frame formats, FCF Bridging (Ethernet to FC bridge), DCBX, and FCF VLAN considerations.
- Experience with Cisco and Brocade Converged Network Switches (FCoE switches).
- Planned and presented education sessions on burgeoning CNA/FCoE technology to developers and service personnel.

IBM

Virtualization Development

2008 - November 2013 (5 years 11 months)

Austin, TX

- Expertise in Virtualization, including NPIV (N_Port ID Virtualization) for FC/FCoE adapters and IBM PowerVM Virtual Storage.
- Technical consultant for Client OS Virtual FC adapter enablement on PowerVM platform. Client OSes include Linux, AIX, and IBMi.

- Power Cloud Initiative - Designed and developed Targeted Device Configuration for AIX across all FC/FCoE product lines for streamlined cloud storage deployment.
- Provided consulting to PowerVM and VM Control teams on design of storage deployment solutions for Power Cloud Initiative.
- Contributed to design and development of SR-IOV Virtual Function (VF) driver for AIX FC/FCoE adapters.

IBM

Technical Lead

2006 - November 2013 (7 years 11 months)

Austin, TX

- Called on to contribute to various ad-hoc workgroups to address issues in customer satisfaction, end-to-end interoperability, performance, and development tools.
- Self-initiated effort to develop sophisticated code management and build tool to reduce development time and automate time-consuming procedures. Tool was expanded to handle multiple source-control engines (CMVC/ ClearCase). Tool was adopted by various AIX teams and used for both personal productivity as well as area-wide build automation.
- Self-initiated effort to develop automated build and code patch tool to provide test teams across IBM with up-to-date code for testing of new adapter products. Adopted by various AIX teams.
- Co-Architect for cross-team Device Driver coordination/communication protocol for use with FCoE CNAs during adapter firmware download, firmware dump, and PCI Enhanced Error Recovery (EEH).
- Coordinated efforts between device driver development, program management, and release management.

IBM

Trainer and Mentor

2006 - November 2013 (7 years 11 months)

Austin, TX

- Owner and co-author of PCI Enhanced Error Handling (EEH) Development guide included in AIX DDK and used by teams across AIX as well as external vendors.
- Taught EEH education module of AIX training course offered as part of IBM AIX Kernel employee training.

- Organized and conducted education sessions with service teams to keep them abreast of the latest technological advances in the FC/FCoE space and provide training to support new features in the FC/FCoE driver stacks.
- Trainer and mentor for IBM new hires and contractors joining AIX FC/FCoE device driver team.

IBM

QLogic FC/FCoE Adapter Driver Developer

2004 - November 2013 (9 years 11 months)

Austin, Texas

- Technical Lead and Lead Developer for all QLogic FC (2312/2422/2432/2532) and FCoE (8001) Device Driver deliverables for IBM PureSystem, Power Systems, and IBM Blade Center platforms running AIX.
- Key liaison between IBM and QLogic in technical collaboration during development of QLogic-based adapter products.
- Project lead for NPIV Enablement on QLogic FC/FCoE adapters for use on PowerVM platform.
- Made key performance enhancements to the AIX QLogic FCoE Device Driver that resulted in an 80% performance improvement (for 4K IOPs) from the initial performance numbers.
- Assisted QLogic Corp. FCode development in debug of and resolution of complex Fibre Channel boot problems.
- Designed and developed Flash/Firmware update code for various QLogic products.
- Designed and implemented SCSI Target Mode support for use in Cluster Aware AIX (CAA) framework for QLogic FC/FCoE Device Driver stack.

IBM

Emulex FC/FCoE Adapter Driver Developer

January 2000 - November 2013 (13 years 11 months)

Austin, Texas

- Co-designer/lead developer for next generation Emulex 16Gb FC and 10Gb FCoE adapter family on the "Lancer" (XE201) chipset for Power Systems and IBM PureFlex platforms.
- Initiated a broad IBM cross-server-brand collaboration (AIX on Power, IBMi on Power, and zOS on System z mainframes) on requirements for adoption of next-gen 16Gb FC and 10Gb FCoE adapter. Resulted in key design changes from supplier that improved and simplified adapter interfaces, improved serviceability and reduced development effort.

- Co-designer/developer for NPIV Enablement on Emulex Lancer FC/FCoE adapters for use on PowerVM platform.
- Designed/developed high-availability features for FC/FCoE drivers, including Fast Failover feature for multipath environments and Dynamic Tracking of FC/FCoE storage devices as they move on the SAN.
- Understanding of various Emulex SLI Firmware APIs (SLI-2/3/4).
- Contributed to design and implementation of SCSI Target Mode support for use in Cluster Aware AIX (CAA) framework for Emulex FC Device Driver stack.

IBM

Storage Area Network and Storage Device Expert

January 2000 - November 2013 (13 years 11 months)

- Deep FC, FCoE and SCSI protocol knowledge. Moderate SAS and iSCSI knowledge.
- Experience with SAN management and switch technologies, including Brocade, QLogic, Cisco FC/FCoE switches.
- Expert in troubleshooting of complex SAN and Multipath IO issues.
- Experience with FC/FCoE trace analyzers and other SAN debug tools.
- Experience in writing software to interface with various FC/FCoE storage products, including IBM Enterprise Storage Server (ESS), EMC Storage, IBM FastT Storage, Hitachi Storage, Engenio storage and JBOD storage.

Walter Reed Army Institute of Research

Research Engineer

May 1994 - May 1995 (1 year 1 month)

Rockville, MD

Blood Research Detachment

- Developed, characterized and made design modifications to a prototype pulsed accelerated stopped-flow calorimeter designed by Dr. Robert L. Berger for use in kinetic studies of biological reactions. The apparatus consisted of thermal, optical, pressure and velocity detection systems.
- Solved a two-year problem by discovering the source of discontinuities in the output of the linear encoder used in the velocity detection system and assisted in implementing a new design to correct the problem.
- Established the protocol for the analysis of raw data output of the optical system.

National Institutes of Health

Research Engineer

August 1993 - December 1993 (5 months)

Bethesda, MD

National Heart, Lung and Blood Institute

Biophysical Chemistry and Instrumentation Lab

- Utilized and developed various troubleshooting techniques in solving problems with the thermistors and digital differential bridge used in the thermal detection system of pulsed accelerated stopped-flow calorimeter.
- Modified delicate calorimeter reactor core, optical system, and mechanical drive system to improve experimental results.

Education

Texas A&M University

M.S., Computer Engineering · (1998 - 2000)

Texas A&M University

B.S, Electrical Engineering · (1989 - 1997)